



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Providence, R. I., by Professor W. W. Bailey, (BULLETIN, vi. 312), and for *A. fruticosa* by C. A. Meyer (*vide* Masters, Veg. Teretology, 192), but the complete change from the monœcious to the diœcious condition in the genus does not appear to have been mentioned, and is of but infrequent occurrence, though known in *Juglans* and *Morus*.—ED.]

Reviews of Foreign Literature.

The Orchids of the Cape Peninsula. By Harry Bolus, F.L.S. (Trans. South African Philos. Soc. v. part 1, pp. 200, with 36 plates, partly colored, Cape Town, 1888.) The South African Flora must afford a rich field of study for those interested in orchids, and who is not? for out of some 1,750 flowering plants, 102, or 5.8 per cent. are of this order.

This is indeed a remarkable proportion, and as shown by Mr. Bolus in his interesting preface, is probably not surpassed by any region of equal area (197 square miles) in the same latitude. They are included in but ten genera, however. Of the five tribes of the order the Neottieæ and Cypripedieæ are not represented. The monograph is very complete, and is ornamented by extremely good plates executed after drawings by the author, mainly from living plants. N. L. B.

Studies on the Tilopterideæ. In the recent numbers of the Bot. Zeitung (Numbers 7, 8, 9, of 1889), Prof. J. Reinke describes several genera of the Tilopterideæ. This family includes a small number of small marine-algæ and is of interest chiefly owing to the question of its supposed place in the system. After the usual exhaustive historical sketch and another concerning its geographical distribution, he gives a description of three species representing as many genera.

The first, *Haplospora globosa*, Kjellm, is a small alga growing in tufts of from 2-10 centimetres in height, these being fastened on small stones or shells, rarely on larger algæ. These tufts of brownish-yellow color consist of numerous single plants resembling *Sphacelaria* in general form and *Ectocarpus* in their manner of branching. The part of the plant growing up from the rhizoid-like cells which serve to fasten it to the stone or shell,

he calls a thallus; it consists of several rows of cells originating from a single row of long cylindrical cells, and terminating also in a single row, the upper one of which is not an apical cell, as in case of *Sphacelaria*, but grows out to a long hair-like appendage; subsequent growth in length takes place by intercolary cross division of single cells. The manner of branching is fully described, but the chief interest from a systematic standpoint lies in the manner of reproduction, which in this genus appears to be non-sexual. The organs of reproduction are termed sporangia and occur either as end cells of side branches, which take the place of the hair-like projections, or in certain cases the sporangium branch is reduced to a single cell, and even in some instances the reduction goes so far that a vegetative cell of the main branch becomes a sporangium. In the early stage of this cell it is filled with a homogeneous, granular substance which fills the space between the nucleus and the chromatophores pressed against the wall. In the next stage are found numerous small bodies which he names mucilage bodies, and others resembling those in the brown algæ; these are separated more or less regularly by fine walls of granular protoplasm.

The nucleus now divides, the two nuclei again divide, they separate from each other, and at this stage a thin membrane is formed around the contents of the sporangium, lying close to the wall of the latter. This wall now breaks and the spore escapes with its new membrane and its four nuclei. It begins to germinate at once, the single cell dividing into four, and by subsequent divisions a small tuber-like body is formed from which arises the stem or thallus of a new plant. Some variations from this process are recorded, but this he claims to be the normal method. Concluding the description of this plant, the author says that he has examined hundreds of this species and does not hesitate to affirm that its method of reproduction is wholly non-sexual. If an analogy between this and the brown algæ is sought for, it may be found in the similarity of vegetative structure which exists between this and the genera *Sphacelaria* and *Ectocarpus*. In the method of reproduction, however, it is most like the tetraspore-producing *Dyctyoceæ*. In both the spores are sexually produced; in both kinds of spores are four nuclei which result

in dividing the spore into four cells. Here the similarity ceases. The difference in the vegetative form, however, is too great to admit of its being closely related to the last named group.

Another genus, *Scaphospora speciosa*, Kjellm., is described, resembling *Haplospora* in external appearance, but is not so easy to cultivate and is found in much smaller quantities; it differs from it by having two kinds of reproductive organs, which are called oosporangia and zoosporangia. The former are very similar to the intercalated sporangia of *Haplospora*; the contents at first resemble those of the other vegetative cells, various changes take place somewhat similar to those described in *Haplospora*; the nucleus, however, does not divide, neither is there a new wall formed around the contents before they escape from the sporangium case. The wall of this case dissolves at a convenient place, the contents escape, assuming at once a spherical shape. Although the author was unable to trace the very next steps in the development of this sphere, owing to the scarcity of material and the difficulty of its cultivation, he says these two points of difference between it and the spore of *Haplospora*, viz: there being only one nucleus and its lacking a membrane, are sufficient to warrant its being considered an egg. The next stage observed was that in which this egg was invested with a membrane and had divided into four cells, each containing a nucleus. Some were found, having sent out rhizoid-like protuberances.

The second kind of reproductive organ occurs on the same individual. It consists either of a metamorphosed branch or parts of branches easily distinguished by the large number of little cells of which they consist.

The direct escape of the contents of these zoosporangia was not observed, but a large number of empty cases were found, also some whose contents had only partially escaped. In these the remaining spores appeared to be naked spheres with two small chromatophores. No cilia could be distinguished. Now in the fresh material containing the empty sporangium cases were found numberless little swarm spores in active motion, whose size and appearance corresponded to the spores found inside the sporangia. These swarm spores, were long, egg shaped, with two cilia, and the view that they were the developed spores of the

zoosporangia was strengthened by the fact, that in the vicinity where these plants grew, were found only four other kinds of plants, and the swarm spores of all these plants are known to be different from those found among the *Scaphospora* plants. These facts are supposed to furnish pretty strong evidence that the organ described as oosporangium is a real oogonium and that the zoosporangium correspond to antheridia and produce the spermatozoids whose function is the fertilization of the egg.

The third genus, *Tilopteris*, is only lightly dwelt upon in this article; its manner of reproduction is said to resemble that of *Haplospora*. The author expresses a wish that some botanist who is able to procure a larger number of plants of the genus *Scaphospora*, and who has a more favorable chance to watch their development, may be able to fill up the gaps in the investigations just recorded, and in concluding speaks against the separation into so many genera, saying there seems no good reason why *Haplospora* and *Scaphospora* may not be united as one genus with *Tilopteris*.

E. L. G.

Index to Recent American Botanical Literature.

Abies bracteata. (Gard. Chron. v. 242, Fig. 44.)

Abies lasiocarpa. M. T. M. (Gard. Chron. v. 172, 173; illustrated.) An interesting discussion of the species and the confusion in regard to its synonymy.

Agaricus Rodmani—*Note on the Poisonous Properties of the*. John Macoun. (Ottawa Naturalist, ii. 142, 143).

Algæ from Granville, O.—*List of*. Chas. L. Payne. (Bull. Denison Univ. iv. 132.) A possible new species is described: *Spirogyra Herricki*.

Algo-Lichen Hypothesis—*The Status of the*. Thos. A. Williams. (Am. Nat. xxiii. 1-8.) An interesting resumé of the conflicting opinions concerning the systematic position of these plants.

Aristolochia Siph. Mrs. Hoskins. (Vick's Monthly, xii. 72, illustrated.)